THE MARYLAND ENTOMOLOGIST

Insect and related-arthropod studies in the Mid-Atlantic region

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The Maryland Entomological Society (MES) was founded in November 1971, to promote the science of entomology in all its sub-disciplines; to provide a common meeting venue for professional and amateur entomologists residing in Maryland, the District of Columbia, and nearby areas; to issue a periodical and other publications dealing with entomology; and to facilitate the exchange of ideas and information through its meetings and publications.

The MES logo features a drawing of a specimen of ***Euphydryas phaëton*** (Drury), the Baltimore Checkerspot, with its generic name above and its specific epithet below (both in capital letters), all on a pale green field; all these are within a yellow ring double-bordered by red, bearing the message "* Maryland Entomological Society * 1971 *". All of this is positioned above the Shield of the State of Maryland. In 1973, the Baltimore Checkerspot was named the official insect of the State of Maryland through the efforts of many MES members.

Membership in the MES is open to all persons interested in the study of entomology. All members receive the journal, ***The Maryland Entomologist***, and the e-mailed newsletter, ***Phaëton***. Institutions may subscribe to ***The Maryland Entomologist*** but may not become members. Prospective members should send to the Treasurer full dues for the current MES year (October – September), along with their full name, address, telephone number, entomological interests, and e-mail address.

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The MES is a non-profit, scientific organization. Meetings are held on the third Friday of October, November, February, March, April and May at 8:00 p.m. in Room 4 of the Biological Sciences Building, University of Maryland Baltimore County (UMBC), or occasionally at another announced site.

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Editor's Note

This issue of ***The Maryland Entomologist*** contains seven articles and notes submitted by members and guests of the Maryland Entomological Society.

James D. Young documents the interception of a *Stenhomalus* White, longhorned beetle (Coleoptera: Cerambycidae: Cerambycinae: Stenhomalini) at the Port of Baltimore, Maryland.

Frank G. Guarnieri presents a three-year survey of the beetles (Coleoptera) of Pocomoke River State Park, Worcester County and Tuckahoe State Park, Caroline County, Maryland. For two species, there are no known previous Maryland records.

Frederick Paraskevoudakis describes his encounter with a Milbert's Tortoiseshell, *Aglais milberti* (Godart) (Lepidoptera: Nymphalidae: Nymphalinae) in Carroll County, Maryland. This is only the second Maryland record for this species.

James F. White, Jr. relates the finding of a Milbert's Tortoiseshell, *Aglais milberti* (Godart) (Lepidoptera: Nymphalidae: Nymphalinae) in New Castle County, Delaware. This is only the second Delaware record for this species.

Daniel J. Schamberger and **Eugene J. Scarpulla** offer an addendum to last year's annotated list of the mosquito species (Diptera: Culicidae) of Maryland. The addendum specifically deals with *Anopheles earlei* Vargas and *Anopheles perplexens* Ludlow.

Richard L. Orr presents a three-year survey of the native bees (Hymenoptera: Apoidea) of Assateague Island National Seashore, Worcester County, Maryland. The survey found five species new to Maryland.

Timothy Foard offers his preliminary observations on the use of artificial nest sites by ants (Hymenoptera: Formicidae) at Patapsco Valley State Park, Howard County, Maryland.

I thank the authors for the wide diversity of submitted articles that further our knowledge of the insects of Maryland. I also express my gratitude to the named and anonymous peer reviewers for their insightful comments.

Eugene J. Scarpulla
Editor

Interception of a *Stenhomalus* White, Longhorned Beetle (Coleoptera: Cerambycidae: Cerambycinae: Stenhomalini) in Baltimore, Maryland

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On 28 August 2009, United States Customs and Border Protection (CBP) at a bonded warehouse near the Dundalk Marine Terminal, Port of Baltimore, Maryland, inspected a maritime shipping container which contained baskets originating from the People's Republic of China. While unloading the container's contents for inspection, CBP Agent T. Morris found an unfamiliar adult longicorn (or longhorned) beetle (Figure 1) in the shipment and submitted the specimen to United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) Plant Protection and Quarantine (PPQ) Identifier Charles Olsen in Atlanta, Georgia. The specimen was tentatively identified as a "New Pest" and was forwarded to Cerambycid specialist Steven W. Lingafelter at the USDA Agricultural Research Service. Dr. Lingafelter positively identified the specimen to the genus *Stenhomalus* White. Unfortunately this genus is in need of revision and therefore the actual species could not be determined. The specimen was returned to Charles Olsen and is housed in the Atlanta Port Collection.

Stenhomalus species are considered quarantine significant voracious wood borers (USCBP 2009). This is the second known interception of the genus *Stenhomalus* that has occurred in the United States (USCBP 2009). The first known interception occurred on 5 July 2005 at the Nashville, Tennessee airport where an adult *Stenhomalus* was found in a shipment of woodware (handicraft items) from the People's Republic of China (Milteer, personal communication; Cavey, in litt.).

The Atlanta Port Collection also contains two other *Stenhomalus* specimens. These two specimens only provide the following information: 1995, dunnage (wooden packing material), China. The labels of the two specimens are in different formats. These two specimens are not listed in the USDA Pest Interception Database (PestID) (Cavey, in litt.) but could possibly be two separate, additional interceptions (Olsen, in litt.).

Cherepanov (1988) states that most species of this group occur in Southeastern Asia and Japan. Cherepanov provided the following description of the genus:

"Adult: Body elongate, flat. Head short. Genae barely perceptible. Antennae slender, longer than body. Pronotum elongate, with small obtuse tubercle laterally. Elytra parallel, flat on disk, individually rounded apically. Metepisternum uniform, without longitudinal groove. Abdominal sternite I in male considerably shorter, in female only slightly shorter then rest of sternites together. Sternite II in female posteriorly emarginated, with setae forming dense brush; sternite III with long incurved setae on posterior margin."

Figure 1. *Stenhomalus* White, 1855. Found in a shipment of baskets originating from the People's Republic of China. Bonded warehouse near the Dundalk Marine Terminal, Port of Baltimore, Maryland, 28 August 2009. Photographed by and used with permission of United States Customs and Border Protection (USCBP 2009).

The Cerambycidae database (Tavakilian 2009) in the "Species 2000 & ITIS Catalogue of Life: 2010 Annual Checklist" lists 64 distinct taxa in the genus. Of those, the following ten taxa are reported from China:

Stenhomalus clarinus Holzschuh, 1995
Stenhomalus complicatus Gressitt, 1948
Stenhomalus coomani Gressitt, 1951
Stenhomalus fenestratus White, 1855
Stenhomalus incongruus incongruus Gressitt, 1939
Stenhomalus odai Niisato & Kinugasa, 1982
Stenhomalus pallidus Gressitt, 1935
Stenhomalus taiwanus taiwanus Matsushita, 1933
Stenhomalus tetricus Holzschuh, 2007
Stenhomalus unicolor Niisato & Hua, 1998

This cerambycid interception is not an isolated incident. Approximately 3 to 4 cerambycid interceptions occur each year at the Port of Baltimore. Unfortunately most are immature and cannot be identified to species.

ACKNOWLEDGEMENTS

I wish to thank Jessica D. Milteer, USDA-APHIS, Legislative and Public Affairs Spokesperson, Riverdale, Maryland for providing preliminary information on the 2005 *Stenhomalus* interception. I thank Joseph F. Cavey, USDA-APHIS-PPQ, Branch Chief, National Identification Services, Riverdale, Maryland for providing PestID information on *Stenhomalus* interceptions. I also thank Charles Olsen, USDA-APHIS-PPQ Identifier, Atlanta, Georgia for providing information on the two 1995 *Stenhomalus* specimens.

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A Survey of the Beetles (Coleoptera) of Pocomoke River State Park, Worcester County and Tuckahoe State Park, Caroline County, Maryland

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ABSTRACT: Results from a survey of the Coleoptera at Pocomoke River State Park and Tuckahoe State Park in Maryland are presented. Some of the more notable species encountered included: *Cotalpa lanigera* (Linnaeus) (Goldsmith Beetle), *Phileurus valgus* (Olivier), and *Strategus antaeus* (Drury) (Scarabaeidae); *Buprestis apricans* Herbst (Turpentine Borer) (Buprestidae); *Chalcolepidius viridipilis* (Say) (Elateridae); and *Goes tesselatus* (Haldeman) (Oak Sapling Borer), *G. variegatus* Linsley and Chemsak, and *Oncideres cingulata* (Say) (Twig Girdler) (Cerambycidae).

STUDY SITE

The Maryland Department of Natural Resources (MDNR) kindly granted research permits to conduct a study of the Coleoptera fauna at Pocomoke River State Park (PRSP) in Worcester County and Tuckahoe State Park (TSP) in Caroline County. The two parks are located on the Coastal Plain in the Maryland section of the Delmarva Peninsula.

Tuckahoe State Park preserves an extensive seasonally flooded freshwater hardwood forest. Pocomoke River State Park is renowned for preserving one of the northernmost *Taxodium distichum* (L.) Rich. (bald cypress) stands in the United States.

Both parks contain habitats that are uncommon to rare in Maryland and I felt a Coleoptera survey would provide new knowledge concerning the biodiversity of beetles in the state and possibly yield new state records or significant range extensions.

In fact, many interesting beetles were observed including possible state records for *Buprestis apricans* Herbst (Turpentine Borer) and *Goes tesselatus* (Haldeman) (Oak Sapling Borer).

Although the precise geographic range for most beetles in general is little known, many of the species encountered in this study are at least superficially associated with the southeastern United States coastal plain that just reaches into Maryland. Thus, some of these beetles are likely be uncommon to rare in other parts of the state.

MATERIALS AND METHODS

The original research permit covered the 2000 collecting season and was renewed for the 2005 and 2006 collecting seasons. Most of the data presented is from PRSP and TSP, but limited surveys were also done at Martinak State Park (MSP) in Caroline County and Pocomoke State Forest (PSF) in Worcester County.

Collecting was not permitted in designated wilderness areas at PRSP. Furthermore, it was stipulated that no protected species could be collected, although it was not anticipated that any Federal- or State-protected Coleoptera occurred in the parks.

Beetles were collected by hand on host plants, under logs and stones, or when observed running on the forest floor and across park roads. Flying beetles were collected with a fine mesh butterfly net. Buckets of fermenting molasses (containing one part molasses with one part water and mixed with a packet of activated bread yeast) were used to attract various specimens.

A surprising number of specimens were collected in spider webs around the eaves of park buildings. It is presumed that the majority of these were night-flying species attracted to security lights on the building walls. However, it is also possible that the structures and webs were acting as flight intercept traps for diurnal species. Often, the webs were spun by *Latrodectus mactans* (Fabricius) (Southern Black Widow), and some care was required to extract the beetles.

A good diversity of species was also encountered inside park buildings with the assumption that these beetles incidentally crawled under the doors and then became trapped inside (i.e., a de-facto non-baited pitfall trap) although I cannot exclude the possibility that the beetles were primarily attracted to lights in and around the buildings.

Beetles directly observed at night flying about or crawling on the ground under lights are described as being collected "at light." Hanging ultra-violet (UV) lights against the side of a tent in the public camping areas was highly productive.

Furthermore, at night I found searching under bright lights in parking lots at nearby gas stations and shopping malls to be very productive. These records are labeled either Hillsboro (adjacent to TSP) or Snow Hill and Pocomoke City (adjacent to PRSP). One cannot assume that beetles collected at these locations occur in the parks, but I believe it is most likely.

Girdled *Carya* Nutt. (hickory sp.) and *Diospyros virginiana* L. (common persimmon) twigs were collected on the ground from MSP and PRSP to rear

Oncideres cingulata (Say) (Twig Girdler). Adult *Asemum striatum* (Linnaeus), *Rhagium inquisitor* (Linnaeus) (Ribbed Pine Borer), and *Monochamus titillator* (Fabricius) (Southern Pine Sawyer) emerged from *Pinus taeda* L. (loblolly pine) logs collected from the PRSP campground firewood supply. Grubs collected from a hollow *Quercus velutina* Lam. (black oak) stump at TSP grew to adult stage *Dynastes tityus* Linnaeus (Eastern Hercules Beetle).

Lastly, I had the opportunity to lead several campfire programs at TSP and PRSP. This involved hanging ultraviolet (UV) and mercury vapor (MV) lights at the park nature centers and identifying specimens that were collected by park visitors. These programs were quite popular, and it was highly rewarding to see the enthusiastic response of children and adults alike to some of Maryland's impressive night flying beetles and other insects.

Identifications were based on personal experience and the following references: Dillon and Dillon (1961), Goulet and Bousquet (2004), MacRae (1991), Staines (1983), and Yanega (1996).

Family arrangement follows Arnett and Thomas (2001) and Arnett et al. (2002). Within each family, species are listed alphabetically. Cerambycid nomenclature is adjusted to follow Monné and Bezark (2009). Cerambycid common names, if provided, follow Yanega (1996).

Plant names are based on the "PLANTS Database" of the National Plants Data Center (2010) of the United States Department of Agriculture, Natural Resources Conservation Service.

RESULTS

This paper presents 118 species of Coleoptera that occur, or likely occur, in PRSP and TSP. An additional 13 species determined only to genus are also listed. Images of many species described in the paper can be seen at the "BugGuide" website that is hosted by Iowa State University (2003-2010) by entering Martinak, Pocomoke, or Tuckahoe in the search field.

SUBORDER ADEPHAGA

Family Carabidae – Ground Beetles

Agonum octopunctatum (Fabricius)
TSP: 3 August 2006, running across park road at night.

Apenes lucidula (Dejean)
TSP: 20 June 2000, UV light.

Brachinus Weber, undetermined species – a bombardier beetle
PRSP: 16 June 2006, on ground at woods at night.

Calleida viridipennis (Say)
TSP: 20 June 2000, UV light.
Pocomoke City: 30 June 2006, at light.

Calosoma sayi Dejean
Pocomoke City: 16 June 2006, at light.
Snow Hill: 17 July 2000, at light.
Note: Not quite as common as *C. scrutator* and prefers more open habitats.

Calosoma scrutator (Fabricius) – Fiery Searcher
Hillsboro: 17 June 2000, at light.
Pocomoke City: 16 June 2006, at light; 30 June 2006, at light.
Snow Hill: 17 July 2000, at light.
TSP: 23 July 2005, UV and MV lights.
Note: Abundant at lights throughout the Delmarva Peninsula.

Carabus sylvosus Say
PRSP: 20 July 2000, on ground in woods at night.
TSP: 20 June 2000, on ground in woods at night.

Carabus vinctus (Weber)
PRSP: 6 May 2006, spider web in campground bathhouse; 27 May 2006, dead in campground bathhouse.

Chlaenius emarginatus Say
TSP: 30 June 2005, UV and MV lights.

Chlaenius erythropus Germar
TSP: 30 June 2005, UV and MV lights.
Note: The largest species in the genus and uncommon in Maryland.

Chlaenius sericeus (Forster)
TSP: 30 June 2005, UV and MV lights.

Chlaenius tomentosus (Say)
PRSP: 27 May 2006, dead in campground bathhouse.

Cylindera unipunctata (Fabricius) – One-Spotted Tiger Beetle
PRSP: 27 May 2006, dead in campground bathhouse.

Dicaelus elongatus Bonelli
TSP: 23 June 2005, dead in campground bathhouse; 5 May 2006, dead in campground bathhouse.

Galerita janus (Fabricius)
TSP: 5 May 2006, dead in campground bathhouse.

Helluomorphoides nigripennis (Dejean)
PRSP: 27 May 2006, running across park road in bright sunlight.
Note: An atypical carabid beetle that resembles a tenebrionid and is uncommon in the Northeast United States.

Lebia grandis Hentz
TSP: 30 June 2005, UV and MV lights.

Myas coracinus (Say)
PRSP: 23 June 2006, dead in campground bathhouse.
TSP: 20 June 2000, UV light.

Pasimachus depressus (Fabricius)
PRSP: 17 July 2000, dead in campground bathhouse.
Note: This large carabid is abundant in the Pine Barrens of New Jersey and also in sandy areas of Virginia and the Carolinas. However, I am unaware of many recent Maryland records.

Poecilus chalcites (Say)
TSP: 30 June 2005, UV and MV lights.

Poecilus lucublandus (Say)
PRSP: 16 April 2006, running across park road in bright sunlight; 16 June 2006, UV and MV lights.

Family Dytiscidae – Predaceous Diving Beetles

Cybister fimbriolatus (Say)
Pocomoke City: 30 June 2006, at light.

SUBORDER POLYPHAGA

Family Hydrophilidae – Water Scavenger Beetles

Hydrophilus triangularis Say – Giant Water Scavenger Beetle
Pocomoke City: 16 June 2006, at light.

Family Silphidae – Carrion Beetles

Necrophila americana (Linnaeus)
TSP: 23 July 2005, fermenting molasses.

Oiceoptoma noveboracencis (Forster)
TSP: 20 June 2000, fermenting molasses.

Family Staphylinidae – Rove Beetles

Homaeotarsus Hochhuth, undetermined species
PRSP: 8 January 2001, under rotten *Pinus taeda* L. (loblolly pine) bark.

Family Passalidae – Bess Beetles

Odontotaenius disjunctus (Illiger) – Horned Passalus, Patent Leather Beetle
Pocomoke City: 30 June 2006, at light.
Note: Abundant year-round under rotten hardwood logs in the study areas.

Family Trogidae – Hide Beetles

Omorgus Erichson, undetermined species 1
PRSP: 6 May 2006, dead in campground bathhouse.

Omorgus Erichson, undetermined species 2
PRSP: 23 June 2006, at light.

Omorgus Erichson, undetermined species 3
TSP: 3 August 2006, at light.

Family Geotrupidae – Earth-boring Dung Beetles

Eucanthus lazarus (Fabricius)
Pocomoke City: 16 June 2006, at light.

Geotrupes blackburnii Fabricius
MSP: 21 October 2000, at light.

Geotrupes egeriei Germar
TSP: 23 July 2005, UV and MV lights.

Geotrupes hornii Blanchard
TSP: 23 July 2005, UV and MV lights; 3 August 2006, at light.

Family Scarabaeidae – Scarab Beetles

Anomala marginata (Fabricius)
Pocomoke City: 30 June 2006, at light.
TSP: 20 June 2000, UV light.

Anomala Samouelle, undetermined species
TSP: 20 June 2000, UV light.

Canthon Hoffmansegg, undetermined species – a tumblebug
PRSP: 20 July 2000, flying through open woods in bright sunlight; 21 July 2000, rolling ball of small mammal dung; 27 May 2006, flying across park road in bright sunlight.

Cotalpa lanigera (Linnaeus) – Goldsmith Beetle (Figure 1)
PRSP: 27 May 2006, dead in campground bathhouse.
Note: This attractive beetle is considered uncommon throughout its range in the eastern United States but was observed to be abundant in May around lights at PRSP.

Diplotaxis Kirby, undetermined species
PRSP: 16 April 2006, spider web by porch light; 23 June 2006, UV light.

Dynastes tityus (Linnaeus) – Eastern Hercules Beetle
Pocomoke City: 30 June 2006, dead in parking lot.
PRSP: 31 July 2006, dead in parking lot.
TSP: 23 July 2005, hollow rotten *Quercus velutina* Lam. (black oak) stump.
Note: Found to be surprisingly common in the survey despite the fact that the study areas represent the extreme northeastern limit of distribution for this giant beetle (the largest insect in Maryland) in North America (Glaser 1976).

Euphoria fulgida (Fabricius)
Pocomoke City: 30 June 2006, flying low in open woods in bright sunlight.
PRSP: 27 May 2006, flying low in open woods in bright sunlight.
PSF: 16 June 2006, on ground in sandy woods.

Euphoria herbacea (Olivier)
PRSP: 16 June 2006, dead in parking lot.
TSP: 23 July 2005, dead in parking lot.

Euphoria sepulcralis (Fabricius)
PRSP: 27 May 2006, dead in parking lot.

Pelidnota punctata (Linnaeus) – Spotted Pelidnota
TSP: 20 July 2005, UV and MV lights.

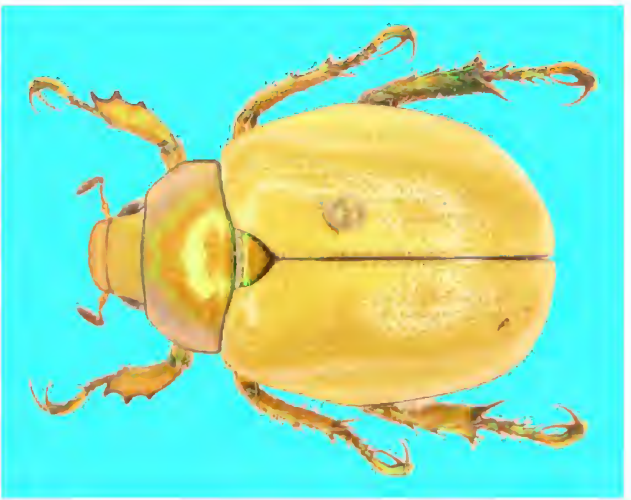

Figure 1. ***Cotalpa lanigera*** **(Linnaeus) – Goldsmith Beetle. Length 20 mm (0.79 in.). Pocomoke River State Park, Worcester County, Maryland, 27 May 2006. Found dead in a campground bathhouse.**

Figure 2. ***Phileurus valgus*** **(Olivier). Length 21 mm (0.83 in.). Pocomoke River State Park, Worcester County, Maryland, 27 May 2006. Found dead in a campground bathhouse.**

Phanaeus vindex MacLeay – Rainbow Scarab
PRSP: 12 August 2006, dead in campground bathhouse.

Phileurus valgus (Olivier) (Figure 2)
PRSP: 27 May 2006, dead in campground bathhouse.
Note: A common scarab of the Southeast United States that barely extends its range into Maryland. In July 2004, I found the head and pronotum of a small triceratops beetle (*Phileurus* Latreille) in a pile of carpenter ant (*Camponotus* Mayr) waste at the base of a hollow rotten hardwood tree at TSP. Charles L. Staines identified the pieces as belonging to *Phileurus valgus*. Previously, the only Maryland records (identified as *P. castaneus* Haldeman, a junior synonym of *P. valgus*) were from Charles County (Glaser 1976, Staines 1984). Several specimens were seen at PRSP indicating that it may now be well established in southeastern Maryland.

Phyllophaga Harris, undetermined species 1
PRSP: 20 May 2006, dead in campground bathhouse.
TSP: 20 June 2000, UV light.

Phyllophaga Harris, undetermined species 2
PRSP: 20 May 2006, dead in campground bathhouse.

Phyllophaga Harris, undetermined species 3
PRSP: 27 May 2006, dead in campground bathhouse.

Phyllophaga Harris, undetermined species 4
PRSP: 12 August 2006, UV light.

Strategus antaeus (Drury) – an ox beetle (Figure 3)
Pocomoke City: 30 June 2006, dead in parking lot.
Note: A common large scarab occurring in sandy forests from Florida up to the Carolinas but then becoming less abundant as it extends its range just along the Coastal Plain with remnant populations up to Massachusetts. Recent Maryland records are infrequent, but this may be in part from sampling bias as ox beetles tend to be somewhat less attracted to lights as compared with the other scarabs of the Subfamily Dynastinae MacLeay.

Strigoderma arboricola (Fabricius)
PRSP: 16 June 2006, UV and MV light.

Trichiotinus piger (Fabricius)
PRSP: 16 June 2006, *Viburnum* L. (viburnum sp.) flowers.
PSF: 16 June 2006, fermenting molasses.

Figure 3. ***Strategus antaeus*** **(Drury). Female. Length 31 mm (1.22 in.). Pocomoke City, Worcester County, Maryland, 30 June 2006. Found dead in a parking lot.**

Figure 4. ***Buprestis apricans*** **Herbst – Turpentine Borer. Length 22 mm (0.87 in.). Pocomoke River State Park, Worcester County, Maryland, 20 May 2006. Found dead in a spider web on the side of PRSP Nature Center at Shad Landing. No known previous Maryland records.**

Valgus canaliculatus (Olivier)
PRSP: 16 June 2006, *Viburnum* (viburnum sp.) flowers.

Family Buprestidae – Metallic Wood-boring Beetles

Actenodes acornis (Say)
PRSP: 16 June 2006, freshly cut *Acer rubrum* L. (red maple) logs in bright sunlight; 23 June 2006, freshly cut *A. rubrum* logs in bright sunlight.

Buprestis apricans Herbst – Turpentine Borer (Figure 4)
PRSP: 20 May 2006, dead in spider web on side of PRSP Nature Center at Shad Landing.
Note: Described as an important pest of multiple *Pinus* L. (pine sp.) that ranges from Texas and Florida to North Carolina (Drooz 1985), although Peck and Thomas (1998) list this species from New York. I am unaware of any Maryland records for this species. It will be interesting to see if this most recent finding represents a significant range expansion.

Buprestis lineata Fabricius
PRSP: 21 July 2000; freshly cut *Pinus taeda* (loblolly pine) logs in bright sunlight; 26 June 2006, freshly cut *P. taeda* logs in bright sunlight.
Snow Hill: 16 June 2006, freshly cut *P. taeda* logs in bright sunlight.
TSP: 23 July 2005, trunk of dying *P. taeda* tree in bright sunlight.
Note: By far the most common *Buprestis* species on the Delmarva Peninsula.

Buprestis maculipennis Gory
PRSP: 21 July 2000, freshly cut *Pinus taeda* (loblolly pine) logs in bright sunlight; 23 June 2006, freshly cut *P. taeda* logs in bright sunlight; 23 June 2006, dead on ground in parking lot.
Note: Like *B. apricans*, this is another species best know from the Coastal Plain of the Southeast United States from Florida to New Jersey (Peck and Thomas 1998). In my experience, this beetle is uncommonly collected in Maryland, but several specimens were observed raising the possibility of a range expansion.

Buprestis rufipes Olivier
TSP: 23 July 2005, dead on camp road.

Chalcophora virginiensis (Drury) – Large Flat-headed Pine Heartwood Borer
PRSP: 20 May 2006, freshly cut *Pinus taeda* (loblolly pine) logs in bright sunlight.

Chrysobothris azurea LeConte
PRSP: 23 June 2006, freshly cut *Pinus taeda* (loblolly pine) logs in bright sunlight.

Chrysobothris dentipes (Germar)
Snow Hill: 16 June 2006, freshly cut *Pinus taeda* (loblolly pine) logs in bright sunlight.

Chrysobothris, unidentified species – in the *C. femorata* (Olivier) species-group
Snow Hill: 16 June 2006, freshly cut *Acer rubrum* (red maple) logs in bright sunlight.
Note: Wellso and Manley (2007) list twelve species in their revision of the *C. femorata* species-group.

Chrysobothris sexsignata Say
PRSP: 27 May 2006, freshly cut *Pinus taeda* (loblolly pine) logs in bright sunlight.

Dicerca lurida (Fabricius)
TSP: 23 July 2005, on side of tent in bright sunlight.

Family Elateridae – Click Beetles

Alaus myops (Fabricius) – Blind Click Beetle
Pocomoke City: 30 June 2006, at light.
PRSP: 22 July 2000, on trunk of large *Pinus taeda* (loblolly pine) tree; 27 May 2006, dead inside campground bathhouse.

Alaus oculatus (Linnaeus) – Eyed Click Beetle
PRSP: 27 May 2006, rotten *Liriodendron tulipifera* L. (tuliptree) logs; 27 May 2006, flying down sunny forest trail

Ampedus collaris (Say)
PRSP: 16 April 2006, spider web by porch light.

Chalcolepidius viridipilis (Say) (Figure 5)
PSF: July 30 2000, on *Quercus alba* L. (white oak) stump in bright sunlight.
Note: Found in a highly disturbed area, basically along an off-road vehicle trail through a fresh clear cut. It is unclear if it was flushed by the cutting or attracted to it, as many beetle species are. The genus *Chalcolepidius* Eschscholtz contains some large and brightly colored Neotropical click beetles. *Chalcolepidius viridipilis* is uncommonly encountered and the only species of the genus in the eastern United States.

Ctenicera aethiops (Herbst)
PRSP: 20 May 2006, on freshly cut *Liquidambar styraciflua* L. (sweetgum) log in bright sunlight.

Figure 5. ***Chalcolepidius viridipilis*** **(Say). Length 26 mm (1.02 in.). Pocomoke State Forest, Worcester County, Maryland, 16 July 2000. Found on a** ***Quercus alba*** **(white oak) stump in bright sunlight in a forest clearcut.**

Figure 6. ***Goes tesselatus*** **(Haldeman) – Oak Sapling Borer. Length 26 mm (1.02 in.). Pocomoke River State Park, Worcester County, Maryland, 17 July 2000. Found dead in a spider web under a vending machine. No known previous Maryland records.**

Dicrepidius palmatus Candeze
PRSP: 21 July 2000, UV light.
Note: The males have prominent pectinate antennae.

Hemicrepidius memnonius (Herbst)
TSP: 20 June 2000, UV light.

Orthostethus infuscatus (Germar)
PRSP: 16 July 2000, in campground bathhouse; 21 July 2000, UV light; 22 July 2006, at light.
TSP: 30 June 2005, UV and MV lights.

Parallelostethus attenuatus (Say)
PRSP: 21 July 2000, flying along wood margin in bright sunlight.

Pityobius anguinus LeConte
PRSP: 30 June 2006, at light; 12 August 2006, at light.

Family Trogossitidae – Bark-Gnawing Beetles

Temnochila virescens (Fabricius)
PRSP: 20 May 2006, freshly cut *Pinus taeda* (loblolly pine) logs in bright sunlight; 23 June 2006, freshly cut *P. taeda* and *Acer rubrum* (red maple) logs in bright sunlight.

Family Cleridae – Checkered Beetles

Chariessa pilosa (Forster)
PRSP: May through June 2006, no specimens collected but seen abundantly in bright sunlight on freshly cut *Pinus taeda* (loblolly pine) and *Acer rubrum* (red maple) logs in small clear cut at Milburn Landing.

Priocera castanea (Newman)
PRSP: 20 July 2000, trunk of freshly cut *Pinus taeda* (loblolly pine) tree in bright sunlight.

Family Cucujidae – Flat Bark Beetles

Cucujus clavipes Fabricius
MSP: 21 October 2000, dead in camp bathhouse.
PRSP: 11 March 2006, flying across park road in bright sunlight.

Family Erotylidae – Pleasing Fungus Beetles

Ischyrus quadripunctatus (Olivier)
PRSP: 16 June 2006, at light.

Megalodacne heros (Say)
PRSP: 22 July 2006, at light.

Family Melandryidae – False Darkling Beetles

Melandrya striata Say
PRSP: 27 May 2006, on trunk of large, rotten but still standing, *Liriodendron tulipifera* (tuliptree) in bright sunlight.

Family Tenebrionidae – Darkling Beetles

Bolitotherus cornutus (Panzer) – Forked Fungus Beetle
PRSP: 22 July 2006, at light.

Strongylium terminatum (Say)
PRSP: 16 June 2006, at light

Tarpela micans (Fabricius)
Pocomoke City: 30 June 2006, at light.

Family Oedemeridae – False Blister Beetles

Oxycopis notoxoides (Fabricius)
Pocomoke City: 30 June 2006, at light.

Oxycopis thoracica (Fabricius)
Pocomoke City: 30 June 2006, at light.

Family Meloidae – Blister Beetles

Lytta aenea Say
PRSP: 16 April 2006, spider web in camp bathhouse; 6 May 2006, spider web in camp bathhouse.

Lytta polita Say
PRSP: 16 April 2006, spider web in camp bathhouse; 29 April 2006, spider web in camp bathhouse; 6 May 2006, spider web in camp bathhouse.

Meloe americanus Leach
MSP: 21 October 2000, on ground in woods at night.
PRSP: 20 May 2006, spider web in camp bathhouse.

Tricrania sanguinipennis (Say)
PRSP: 16 April 2006, spider web in camp bathhouse; 29 April 2006, spider web in camp bathhouse.

Family Pyrochroidae – Fire-colored Beetles

Neopyrochroa femoralis (LeConte)
PRSP: 20 May 2006, hovering around trunk of large, rotten but still standing, *Liriodendron tulipifera* (tuliptree) in bright sunlight.

Family Cerambycidae – Longhorned Beetles

Anelaphus parallelus (Newman) – Oak Twig Pruner
PRSP: 6 May 2006, spider web in campground bathhouse; 16 June 2006, spider web next to outdoor building light.

Anelaphus pumilus (Newman)
PRSP: 16 June 2006, at light.

Arhopalus rusticus obsoletus (Randall)
Pocomoke City: 16 June 2006, at light.

Asemum striatum (Linnaeus)
PRSP: *Pinus taeda* (loblolly pine) log brought indoors 7 January 2001, adults emerged between 15 February and 15 March 2001.

Astylopsis arcuata (LeConte)
Pocomoke City: 30 June 30 2006, at light.

Astylopsis sexguttata (Say)
PRSP: 16 June 2006, UV and MV lights.

Brachyleptura vagans (Olivier)
PRSP: 16 June 2006, *Viburnum* (viburnum sp.) flowers.

Eburia quadrigeminata (Say) – Ivory-marked Beetle
TSP: 23 July 2005, at light.

Elaphidion mucronatum (Say) – Spined Bark Borer.
TSP: 23 July 2005, UV and MV lights.

Elytrimitatrix undata (Fabricius)
PRSP: 22 July 2006, at light.
TSP: 23 July 2005, UV and MV lights.

Enaphalodes atomarius (Drury)
PRSP: 22 July 2006, at light; 31 July 2006, at light.
TSP: 23 July 2005 UV and MV lights; 23 July 2005, fermenting molasses; 3 August 2006, at light.

Enaphalodes rufulus (Haldeman) – Red Oak Borer
PRSP: 17 July 2000, at light; 20 July 2000, UV light; 22 July 2006, at light.
TSP: 23 July 2005, UV and MV lights.

Euderces pini (Olivier)
PRSP: 27 May 2006, flying over freshly cut brush pile.

Goes pulcher (Haldeman) – Living-hickory Borer
TSP: 4 August 2006, UV and MV lights.

Goes tesselatus (Haldeman) – Oak Sapling Borer (Figure 6)
PRSP: 17 July 2000, dead in spider web under vending machine.
Note: A serious pest of *Quercus* L. (oak sp.) saplings that occurs in the Southeast United States up to Pennsylvania (Drooz 1985). I am unaware of any recent Maryland records and no actual Maryland specimens were reported by Staines (1987) or Glaser (1992).

Goes tigrinus (DeGeer) – White Oak Borer
PRSP: 30 June 2006, UV and MV lights.

Goes variegatus Linsley and Chemsak (Figure 7)
PRSP: 30 June 2006, UV and MV lights.
Note: Not reported from Maryland by Staines (1987) or Glaser (1992). Yanega (1996) describes the species as uncommon in the Southeast United States and with the host plant being unknown. Interestingly, Robert Gardner, Philip Kean and I each collected a specimen of this species at UV light at Hereford, Baltimore County, in June 2005 and 2006. Thus, it is possible that *G. variegatus* is newly established throughout Maryland.

Graphisurus despectus (LeConte in Agassiz)
TSP: 23 July 2005, on trunk of *Carya* (hickory sp.) tree at night.

Knulliana cincta (Drury) – Banded Hickory Borer
PRSP: 27 May 2006, dead in spider web in campground bathhouse.

Figure 7. ***Goes variegatus*** **Linsley and Chemsak. Length 13 mm (0.51 in.). Pocomoke River State Park, Worcester County, Maryland, 30 June 2006. Collected at light.**

Figure 8. ***Oncideres cingulata*** **(Say) – Twig Girdler. Length 16 mm (0.63 in.). Martinak State Park, Caroline County, Maryland. Reared from girdled** ***Carya*** **(hickory sp.) twigs collected on the ground 21 October 2000 and brought indoors 1 January 2001. Adults emerged between 20 April and 22 April 2001.**

Monochamus carolinensis (Olivier)
Pocomoke City: 16 June 2006, at light; 30 June 2006, at light.
PRSP: 20 July 2000, on trunk of freshly cut *Pinus taeda* (loblolly pine) tree.

Monochamus titillator (Fabricius) – Southern Pine Sawyer
Pocomoke City: 16 June 2006, at light; 30 June 2006, at light.
PRSP: 21 July 2000, on trunk of freshly cut *Pinus taeda* (loblolly pine); *P. taeda* log brought indoors 7 January 2001, adults emerged between 5 May and 15 May 2001; 12 August 2006, dead in spider web next to porch light.

Neandra brunnea (Fabricius) – Pole Borer
TSP: 6 August 2005, at light.

Neoclytus acuminatus (Fabricius) – Red-headed Ash Borer
Snow Hill: 26 June 2006, freshly cut *Acer rubrum* (red maple) logs in bright sunlight; 30 June 2006, freshly cut *A. rubrum* logs in bright sunlight.

Neoclytus scutellaris (Olivier)
PRSP: 21 July 2000, *Sassafras albidum* (Nutt.) Nees (sassafras) leaves.
TSP: 3 August 2000, dead in campground bathhouse.

Oncideres cingulata (Say) – Twig Girdler (Figure 8)
MSP: Girdled *Carya* Nutt. (hickory sp.) and *Diospyros virginiana* L. (common persimmon) twigs were collected on the ground 21 October 2000 and brought indoors on 1 January 2001, adults emerged from 20 April to 22 April 2001.
PRSP: Girdled *Carya* twigs were collected on the ground 7 January 2006 and kept outdoors, adults emerged 30 October 2006.
TSP: Many girdled *Carya* twigs were observed 21 October 2000 but not collected.
Note: Uncommonly collected in Maryland although I think collectors may be missing the species because of the adult's very late emergence and flight times. However, these beetles are clearly abundant as evidenced by the large number of girdled twigs that can be found easily throughout the study areas.

Orthosoma brunneum (Forster) – Brown Prionid
PRSP: 21 July 2000, UV light; 30 July 2005, at light.

Prionus laticollis (Drury) – Broad-necked Root Borer
PRSP: 20 July 2000, flying along wood margin at dusk; 22 July 2006, at light.
TSP: 23 July 2005, female on ground laying eggs at base of *Fagus grandifolia* Ehrh. (American beech) tree.
Note: Large, conspicuous, and very common throughout the study area.

Prionus pocularis Dalman in Schoenherr
PRSP: 21 July 2000, at light; 22 July 2000, dead in parking lot; 14 August 2005, at light; 22 July 2006, at light; 31 July 2006, at light.
Note: Known to occur throughout southeastern Maryland but usually not abundant. However, PRSP is the only place I know of in Maryland where *P. pocularis* numbers equal or exceed those of *P. laticollis*.

Purpuricenus paraxillaris MacRae
TSP: 23 July 2005, fermenting molasses.

Rhagium inquisitor (Linnaeus) – Ribbed Pine Borer
PRSP: *Pinus taeda* (loblolly pine) log brought indoors 7 January 2001, adults emerged between 15 January and 1 February 2001.

Saperda discoidea Fabricius – Hickory Saperda
TSP: 23 July 2005, UV and MV lights.

Saperda obliqua Say – Alder Borer
PRSP: 17 July 2000, inside campground bathhouse.

Sternidius alpha (Say)
PRSP: 27 May 2006, spider web by porch light.
TSP: 30 June 2005, UV and MV lights.

Strangalepta abbreviata (Germar)
PRSP: 16 June 2006, *Viburnum* (viburnum sp.) flowers.

Strangalia luteicornis (Fabricius)
PRSP: 16 June 2006, *Viburnum* (viburnum sp.) flowers.

Typocerus zebra (Olivier)
PRSP: 20 May 2006, on car window in campground parking lot; 16 June 2006, *Viburnum* (viburnum sp.) flowers; 23 June 2006, on rotten *Pinus* (pine sp.) log.

Family Brentidae – Straight-snouted Weevils

Arrhenodes minutus (Drury) – Oak Timberworm
PRSP: 16 June 2006, *Quercus falcata* Michx. (southern red oak) log at night.
TSP: 23 July 2005, *Quercus velutina* (black oak) log at night.

Family Curculionidae – Snout Beetles and True Weevils

Curculio proboscideus Fabricius – an acorn weevil
MSP: 21 October 2000, on ground under mature mixed *Quercus* (oak sp.) and *Carya* (hickory sp.) trees.

Hylobius pales (Herbst) – Pales Weevil
PRSP: 21 July 2000, UV light; 27 May 2006, at light; 27 May 2006, dead in camp bathroom.

DISCUSSION

Only a small proportion of the beetles seen at PRSP and TSP are listed in this paper. Even with my superficial sampling methods, I quickly became overwhelmed with the diversity of species encountered and thus chose to focus on limited subsets of beetles that I felt I had the best opportunity to identify. This bias created significant gaps in the survey. For example, three of the largest beetle families: Staphylinidae (rove beetles), Tenebrionidae (darkling beetles), and Curculionidae (snout beetles and weevils), are represented by only five total species. Another large family, the Chrysomelidae (leaf beetles), has no entries at all!

From my personal experience with more intensive and longitudinal collecting of beetles at locations in nearby Baltimore County, Maryland and Morgan County, West Virginia, I can say that TSP and PRSP are incredibly rich in Coleoptera biodiversity. I predict that a more intensive survey would easily yield at least two thousand species at TSP and probably more at PRSP because of its larger size and greater diversity of habitat. I hope that this paper leads to further study.

SUMMARY OF REFERENCED HOST PLANTS

Acer rubrum L.	red maple	Aceraceae
Carya Nutt.	hickory species	Juglandaceae
Diospyros virginiana L.	common persimmon	Ebenaceae
Fagus grandifolia Ehrh.	American beech	Fagaceae
Liquidambar styraciflua L.	sweetgum	Hamamelidaceae
Liriodendron tulipifera L.	tuliptree	Magnoliaceae
Pinus L.	pine species	Pinaceae
Pinus taeda L.	loblolly pine	Pinaceae
Quercus L.	oak species	Fagaceae
Quercus alba L.	white oak	Fagaceae
Quercus falcata Michx.	southern red oak	Fagaceae
Quercus velutina Lam.	black oak	Fagaceae
Sassafras albidum (Nutt.) Nees	sassafras	Lauraceae
Viburnum L.	viburnum species	Caprifoliaceae

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Sight Record of Milbert's Tortoiseshell, *Aglais milberti* (Godart) (Lepidoptera: Nymphalidae: Nymphalinae) in Carroll County, Maryland

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Milbert's Tortoiseshell, *Aglais milberti* (Godart) (Lepidoptera: Nymphalidae: Nymphalinae), is a widespread butterfly species in North America, found primarily in northern latitudes and montane habitat. It ranges across Canada south of the taiga into the United States from Maine to California, southward to Pennsylvania in the east and through the Rocky Mountains in the west. Although some records exist in the mountains of the Carolinas, Georgia or Arkansas, it is rarely encountered southward (Opler and Malikul 1992). Despite such a broad range, it has only been documented once before in Maryland from Allegany County in 1949 by the late Franklin H. Chermock (Simmons 1963) and its appearance in northern Carroll County is indeed an unusual record. It has only been regarded as an occasional stray in the Delmarva region (Woodbury 1994).

The location of the current sighting lies in the northern end of the Finksburg region near a hamlet called Patapsco, Maryland. This region, only about a dozen miles from the Pennsylvania line, is above the "Fall Line" and is typified by rolling wooded hills, valleys and farmlands similar to the Appalachian Foothills. The exact location of this sighting is in fact along one of the ridges bordering the East Branch Patapsco River, at the private residence of this author. The property, 3200 Patapsco Road, is situated on the edge of the ridge which overlooks the undeveloped valley and is bordered by deciduous forest.

It was on a crisp, cool morning around 1100 hours on 21 September 2008, a butterfly was initially observed from my backyard deck at a distance of about 27.4 meters (90 feet). It was flying around a large *Buddleja* L. (Buddlejaceae), butterflybush species, located near the forest edge in the rear yard. As it circled around the flowers, my first impression at that distance was that it may be simply *Polygonia comma* (T. Harris) (Nymphalidae: Nymphalinae), Eastern Comma, as it was similar in size and wing shape. It then flew directly towards me and landed in a flowerbed next to the deck, only 3 meters (10 feet) away. At this point, it held open its wings revealing characteristic orange-yellow bands across the outer third of both forewings and hindwings while the inner two-thirds were black except for two small orange patches on the forewing costa. The outer margins of both wings were irregular with a narrow black marginal border, and the overall wing size was approximately 50.8 mm (2 inches) across.

As I stared in amazement, it didn't take long to realize that I was looking at an *Aglais milberti* and I ducked inside to fetch my net. I have previously seen this species several times in the western United States, as well as the similar European species, *Aglais urticae* (Linnaeus), Small Tortoiseshell, in the mountains of northern Greece. I bounded barefoot down the steps into the yard and found the butterfly still sitting in the flowerbed. Upon my approach it flew up and began circling around in ever widening arcs until it flew over the tall evergreen trees which constitute the fence line with the adjacent property. I immediately ran around the tree line and indeed found the butterfly circling around the open yard in front of the neighboring structure. I followed it for a minute and then it came around to the front of the low one-story building bordering the narrow road.

Here, while I was running right behind it, the butterfly flew low to the ground along the length of the building, approximately 18.3 meters (60 feet), and I was able to clearly see once again the distinctive markings of *A. milberti*. At the end of this building, the butterfly landed on a sunlit dirt embankment less than 4.6 meters (15 feet) below where I was standing. Once again it held open its wings long enough for me to clearly see the yellow-orange bands and other features mentioned previously. I slowly followed, but the wary butterfly quickly flew up and headed down the road along the weedy shoulder. Chasing behind it at a full gallop, I was hoping to try for a last ditch swing in flight but it then disappeared into the forest across the road. I was left panting by the roadside with blistered feet and dumbfounded with disbelief over what had just occurred.

Subsequent inquiries and literature searches revealed that this was a scarce encounter indeed and that there were no known recent records for this insect in Maryland (Richard Smith, personal communication). In fact the only other known Maryland records were the specimens collected near Frostburg by Chermock on 7 July 1949. He reported numerous *A. milberti* flying in a high dry field of flowering goldenrod (Asteraceae), on which he collected several individuals (Simmons 1963). There have been numerous serious collectors, who over the past decades, have diligently searched for butterflies in all counties in Maryland, including Garrett and Allegany. It seems quite puzzling that there have been no other records reporting this butterfly from anywhere in Maryland in over 60 years. Moreover it seems plausible that it should turn up at least in Garrett County, given that the elevation and cooler climate found there is the preferred habitat of this butterfly. Records from surrounding states are summarized below.

Delaware

There have been two records from Delaware. The first was observed (no date given) at Red Clay Creek in Ashland, New Castle County, by Dr. Stanley Temple and reported in the spring 1986 issue of the *Delaware Conservationist* (Temple 1986). The second was recently observed and photographed at

Burrows Run Preserve near Hockessin, New Castle County, by Amy Wendt White, Judi VanderWerff and James F. White, Jr. on 28 September 2009 (J. F. White, Jr. 2010).

District of Columbia
Although there are no records, it was suggested many years ago that *A. milberti* could quite possibly, occasionally occur in the Washington area (Clark 1932).

Pennsylvania
Over the years there have been numerous sightings and confirmed reports from Pennsylvania which are consistent with its established range (Richard Smith, in litt.). Documented records exist in forty-four counties (Opler et al. 2010).

Virginia
There are no documented records for *A. milberti* in Virginia (Opler et al. 2010).

West Virginia
There are two Monongalia County records. Specimens were collected in October 1973 and September 1980 (Allen 1997).

There have been occurrences of large population increases of *A. milberti* in the northeastern United States where the butterflies become somewhat migratory and are encountered in regions where they normally are not seen (Clark 1932). Many of the sightings from southern locales are attributed to these population fluctuations as it seems the butterflies are capable of straying large distances and occupying lowlands if they are cool enough (Pyle 1981). Microclimate and geography play a role in migration as these strays travel along cooler ridges and valleys into areas they usually do not visit. The topography comprising the upper Patapsco River valley would seem to abet such strays and may explain why *A. milberti* was encountered in this location. Such an encounter fosters enthusiasm and diligence in searching for and observing unusual species in locales that may be otherwise overlooked as being ordinary in terms of their fauna. For many reasons, the last two decades have seen species diversity and overall population declines for numerous butterfly and other insect species throughout much of Maryland. As suitable habitats are further lost, these ridges and valleys serve as reservoirs and conduits for many of our butterfly species.

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Milbert's Tortoiseshell, *Aglais milberti* (Godart) (Lepidoptera: Nymphalidae: Nymphalinae) in New Castle County, Delaware

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Finding or observing a rare or uncommon plant or animal is one of a naturalist's greatest joys. I for one have spent many hours searching for rare birds, herps, and insects. However, many times rarities turn up when you don't expect them and sometimes they are found by the unsuspecting.

One such find happened on 28 September 2009 at the Delaware Nature Society's Burrows Run Preserve near Hockessin, New Castle County, in northern Delaware. During the "Life of the Monarch Butterfly" program being taught that morning to students from The Pilot School, one of the children netted a butterfly that looked unusual to the Teacher-Naturalists (TNs) leading the program. One of these TNs, my wife Amy Wendt White, realized that she had never observed this species of butterfly before and decided to keep it in the collecting jar until she could make a positive identification. After the school group left the preserve, Amy and fellow TN Judi VanderWerff were able to match the butterfly to one in the *Butterflies of Delmarva* field guide (Woodbury 1994). The butterfly (Figure 1 and Figure 2) was a Milbert's Tortoiseshell, *Aglais milberti* (Godart) (Lepidoptera: Nymphalidae: Nymphalinae), a butterfly very rarely encountered in our area. This handsome butterfly is mostly dark on the upperside except for a wide, bright orange band near the outer edge of the wings.

Aglais milberti typically ranges well north of Delaware, usually in the mountains, and also in the western United States. North of Delaware, *A. milberti* has been found in 44 counties in Pennsylvania and 11 counties in New Jersey (Opler et al. 2010). Considered a stray in the mid-Atlantic region, this individual possibly was blown down from the Appalachian Mountains.

This is only the second record of *A. milberti* reported in Delaware. The first was reported by Dr. Stanley Temple at Red Clay Creek in Ashland, New Castle County (Temple 1986). In fact, these two sightings are the only records for the entire Delmarva Peninsula (Delaware, Eastern Shore of Maryland, and Eastern Shore of Virginia) (Opler et al. 2010).

Figure 1. ***Aglais milberti*** **(Godart) – Milbert's Tortoiseshell, dorsal view. Burrows Run Preserve near Hockessin, New Castle County, Delaware. 28 September 2009.**

Figure 2. ***Aglais milberti*** **(Godart) – Milbert's Tortoiseshell, ventral view. Burrows Run Preserve near Hockessin, New Castle County, Delaware. 28 September 2009.**

If one considers the total area of the three Delmarva states (the Delmarva Peninsula, as well as the portions of Maryland and Virginia west of the Chesapeake Bay), only two additional records exist, both in Maryland. Franklin H. Chermock collected several specimens near Frostburg, Allegany County, on 7 July 1949 (Simmons 1963). Frederick Paraskevoudakis (2010) observed one *A. milberti* on 21 September 2008 near Patapsco, Carroll County. Opler et al. (2010) reports no records for Milbert's Tortoiseshell in Virginia.

This Milbert's Tortoiseshell brings the total number of butterfly species found at the Burrows Run Preserve to fifty. This sighting makes apparent that naturalists need to stay alert at all times for the next unexpected rarity that could show up at any time.

ACKNOWLEDGEMENTS

I wish to thank Richard H. Smith, Jr., Coordinator of butterfly species records for Maryland, Delaware and the District of Columbia for "Butterflies and Moths of North America" (Opler et al. 2010) for reviewing a draft of this note.

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An Annotated List of the Mosquito Species (Diptera: Culicidae) of Maryland – Addendum

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Sixty species were named in "An Annotated List of the Mosquito Species (Diptera: Culicidae) of Maryland" (Schamberger 2009). In addition to these 60 species, Schamberger mentioned that *Anopheles earlei* Vargas and *Anopheles perplexens* Ludlow had been reported in United States Army Environmental Hygiene Agency (USAEHA) mosquito surveillance reports as having occurred in Maryland. When Schamberger (2009) went to press, attempts had been unsuccessful in determining if voucher specimens or details existed for these two reported anopheline species. It was also unknown what keys or characters were used to identify the two species in the 1980s and 1990s. Although *An. earlei* and *An. perplexens* were mentioned by Schamberger (2009), they were not added to the Maryland list at that time. It was hoped that in the future, voucher specimens might be located that were housed at Fort George G. Meade, Maryland during the 1980s and 1990s (Harlan, personal communication). If the specimens still existed, they could possibly be reexamined for species confirmation.

Since publication of the list, contact has been made with Benedict B. Pagac Jr., BCE, Entomologist, Entomological Sciences Division, US Army Public Health Command, Fort George G. Meade. Pagac provided the following comments regarding *An. earlei* and *An. perplexens*.

Anopheles earlei: The *An. earlei* identification was based on a single adult female specimen (USAEHA 1988). Pagac (in litt.) checked the reference collection at Fort Meade and found no specimen records (vouchers) for *An. earlei*. He looked at the historical records and they suggested that the person who was working at that time was skilled, but Pagac would be hesitant to accept this report without a voucher.

Anopheles perplexens: Mosquito surveillance reports (USAEHA 1984, 1988, 1989, 1990, 1991) documented substantial numbers of *An. perplexens*. Since the publication of Schamberger (2009), an additional report was found of one adult female *An. perplexens* at Fort George G. Meade, Anne Arundel County in

September 1985 (USAEHA 1986). Pagac (in litt.) currently has at least two labeled specimens of adult female *An. perplexens* from Fort Meade. He reported that the primary key relied on at that time was Darsie and Ward (1981) and he was confident that determinations were based on the relative size of the subcostal pale spot (less than 0.33 length of the dark-scaled area between the subcostal pale spot and the apical pale spot).

Fritz et al. (1991) determined that the SCP ratio (the relative size of the subcostal pale spot to the preapical dark spot) was highly variable in *An. punctipennis* (Say) and that it should not be used exclusively for separating the two species.

Harrison (in litt.) has also reared *An. punctipennis* broods from individual females in North Carolina that had broad subcostal spots. His findings have mirrored those of Fritz et al. (1991). Within a progeny brood from a single female, Harrison has found individuals that had the subcostal spot: 1) like *An. punctipennis*; 2) intermediate between *An. punctipennis* and *An. perplexens*; and 3) like *An. perplexens*. He also reported that the larval character used to separate the two species (*An. perplexens*: seta 2 single on the abdominal segments; *An. punctipennis*: seta 2 branched on the abdominal segments) is not very reliable either. He has seen many *An. punctipennis* with seta 2 single on the abdominal segments.

Harrison stated that the best morphological characters for separating the two species are on the eggs. Linley and Kaiser (1994) provided scanning electron microscopy of eggs and described characters that distinguished each species. Differences were based on width of the deck, narrowing of the deck in the middle of the egg, structure of the frill, and whether the frill hid the ventral plastron.

Currently, Harrison and collaborators are working on sequencing and developing molecular genetic primers for *An. perplexens* and *An. punctipennis*. The goal is to develop a genetic method for differentiating the two species. Additionally, the Mosquito Barcode Initiative (MBI) is a demonstration project of the Barcode of Life Initiative (BOLI 2010). MBI plans to barcode 80% of the 3500 known species and develop a global system for identifying mosquitoes.

SUMMARY

Anopheles earlei: The status of *An. earlei* in Maryland remains unconfirmed due to the lack of a voucher specimen. This species will remain off the list of Maryland mosquitoes.

Anopheles perplexens: The status of *An. perplexens* in Maryland is currently in limbo. Adult female voucher specimens do exist, but since the wing

characteristics used to separate adult females are unreliable for differentiating this species from *An. punctipennis*, the species must remain off of the list of Maryland mosquitoes at this time. When genetic differentiation between the two species becomes available, the voucher specimens could be analyzed for species determination.

ACKNOWLEDGEMENTS

We wish to thank Benedict B. Pagac Jr., BCE, Entomologist, Entomological Sciences Division, US Army Public Health Command, Fort George G. Meade; Dr. Bruce A. Harrison, Medical Entomologist/Taxonomist at the North Carolina Department of Environment and Natural Resources; Dr. Richard C. Wilkerson, Manager and Research Entomologist at the Walter Reed Biosystematics Unit, Museum Support Center, Smithsonian Institution; and Dr. Harold J. Harlan, former Chief of the Entomological Sciences Division of the United States Army Environmental Hygiene Agency – North at Fort George G. Meade and current Senior Scientific Associate at the Armed Forces Pest Management Board for their assistance and advice regarding *An. earlei* and *An. perplexens*.

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Preliminary List of the Bees (Hymenoptera: Apoidea) of Assateague Island National Seashore, Worcester County, Maryland

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ABSTRACT: From 2005 through 2007, a survey of the bees (Hymenoptera: Apoidea) of the Maryland portion of Assateague Island was undertaken. Both netting and "bee bowl" trapping were utilized during the survey. Fifty-seven (57) species were identified during the study. The native bee composition of the barrier island proved to be very different than from the adjacent mainland. New Maryland bee records were established and a number of sand specialists were identified during the survey. Wild *Apis mellifera* Linnaeus (Honey Bee) colonies, once established on the island, are no longer present.

INTRODUCTION AND STUDY SITE

The National Park Service's (NPS) Assateague Island National Seashore (ASIS), along with the State of Maryland, manage Assateague Island ("the island") north of the Maryland/Virginia state line. The Maryland-owned section of the island, Assateague State Park, is limited in size and does not contain any unique habitats that are not found elsewhere within the much larger and more extensive ASIS. Therefore, the State Park was not sampled in this survey. ASIS contains the only stretch of barrier island in Maryland that is largely natural and undeveloped (Furbish et al. 1994). Assateague Island south of Maryland is managed by the Chincoteague National Wildlife Refuge and is not included as part of this paper.

Assateague Island is experiencing littoral drift towards its south end (Higgins et al. 1971). Currently the island runs uninterrupted from just south of Ocean City, Maryland to the sand hook at Tom's Cove in Virginia. In recent years this continuum has experienced intermittent ephemeral inundations due to storms and/or abnormally high tides, but the island still remains intact as of the writing of this paper.

A three-year survey of the insects of ASIS was undertaken from 2005 through 2007 by Mid-Atlantic Invertebrate Field Studies (Orr 2008). It was identified early on that bees (Hymenoptera: Apoidea) should be a major focus for the three-year survey since this would be the first bee survey for a barrier island in the Mid-Atlantic Region.

MATERIALS AND METHODS

Two methods were utilized in the survey. The first method was netting. Two types of nets were used: 1) a general sweep net and 2) an aerial net for targeting bees visiting flowers. Opportunistic netting occurred throughout the three-year study. The second method was bee bowl trapping which only occurred in 2006 and 2007. In 2006, bee bowls were run on 6 April, 7 April, 4 May, 5 May, 13 June, 17 June, 1 July, 19 September and 20 September. In 2007, bee bowls were run on 2 April, 22 May, 23 May, 6 September and 7 September. Both netting and bowl trapping were done at various locations throughout ASIS.

The bowl traps consisted of fifteen 96.1 milliliter (3.25 ounce) "Solo™ Soufflé Portion Cups" placed in transects. Five each fluorescent yellow, fluorescent blue and non-fluorescent white bowls were alternated and spaced approximately 5 meters (16.4 feet) apart. The bowls were filled with water that had been treated with a small amount of liquid detergent. The bowls were either set out in the early morning, before the other field work started, and picked up at the end of the day (approximately 8 hours) or left overnight and picked up the following evening (approximately 20 hours). The bowl protocol used on the island was fine-tuned by the author from that presented in LeBuhn et al. (2007).

All specimens required identification in the laboratory using the online Discover Life "IDnature guide" for Hymenoptera: Apoidea – Bees; Sphecid Wasps (2006, 2007). To ensure accuracy, all preliminary identifications made by the author were checked by Sam Droege, Head of the United States Geological Survey (USGS) Native Bee Inventory and Monitoring Laboratory. Voucher specimens of all the identified bee species were deposited with the National Park Service.

RESULTS

Fifty-seven species of bees were recorded on the island during the three-year survey. These species are listed in Table 1 along with the numbers collected in bee bowls and while netting. The known flight period, based on captures on ASIS, is also provided in Table 1.

There was an obvious seasonality to the diversity of species and the flight periods of the island's bees. The most drastic change was between spring and fall, while in between there was a transition which was abrupt for some species, but more gradual for others. Figure 1 summarizes the five most numerous spring (April/May) bee captures and Figure 2 summarizes the five most numerous fall (September) bee captures of 2005-2007.

Family	Species	Island Flight Period	Bowl Trapped Bees 2006-07	Netted Bees 2005-07	Total Bees Collected 2005-07
Colletidae	*Colletes americanus* Cresson	19 SEP – 20 SEP	2	0	2
Colletidae	***Colletes mitchelli* Stephen**	19 SEP – 20 SEP	12	8	20
Colletidae	*Colletes simulans* Cresson	19 SEP – 20 SEP	5	0	5
Colletidae	*Colletes thoracicus* Smith	5 MAY – 23 MAY	0	2	2
Colletidae	*Colletes validus* Cresson	2 APR – 4 MAY	1	3	4
Colletidae	*Hylaeus modestus* Say	2 JUL	0	4	4
Halictidae	*Agapostemon splendens* (Lepeletier)	11 JUN – 20 SEP	8	5	13
Halictidae	*Agapostemon virescens* (Fabricius)	20 SEP	1	0	1
Halictidae	*Augochlora pura* (Say)	2 APR – 20 SEP	24	5	29
Halictidae	*Augochlorella aurata* (Smith)	2 APR – 20 SEP	197	7	204
Halictidae	*Halictus poeyi* Lepeletier	22 MAY – 8 OCT	1	3	4
Halictidae	*Lasioglossum admirandum* (Sandhouse)	19 SEP – 20 SEP	1	0	1
Halictidae	*Lasioglossum bruneri* (Crawford)	2 APR – 23 MAY	10	1	11
Halictidae	*Lasioglossum coreopsis* (Robertson)	4 MAY	6	0	6
Halictidae	*Lasioglossum forbesii* (Robertson)	19 SEP – 20 SEP	0	1	1
Halictidae	*Lasioglossum fuscipenne* (Smith)	2 APR – 2 JUL	1	1	2
Halictidae	*Lasioglossum halophitum* (Graenicher)	19 SEP – 20 SEP	1	0	1
Halictidae	***Lasioglossum lustrans* (Cockerell)**	19 SEP – 20 SEP	4	0	4
Halictidae	*Lasioglossum marinum* (Crawford)	4 MAY – 20 SEP	25	6	31
Halictidae	***Lasioglossum nymphale* (Smith)**	4 MAY – 20 SEP	30	3	33
Halictidae	*Lasioglossum oblongum* (Lovell)	4 MAY – 2 JUL	8	2	10
Halictidae	*Lasioglossum pilosum* (Smith)	4 MAY – 20 SEP	19	5	24
Halictidae	*Lasioglossum rohweri* (Ellis)	22 MAY – 20 SEP	7	0	7
Halictidae	***Lasioglossum truncatum* (Robertson)**	17 JUN	1	1	2
Halictidae	*Lasioglossum versatum* (Robertson)	19 SEP – 20 SEP	1	0	1
Halictidae	*Lasioglossum zephyrum* (Smith)	19 SEP – 20 SEP	0	1	1
Halictidae	*Sphecodes* Latreille species*	22 MAY – 2 JUL	1	1	2
Andrenidae	*Andrena braccata* Viereck	20 SEP	0	1	1
Andrenidae	*Andrena placata* Mitchell	20 SEP	0	1	1
Andrenidae	*Andrena simplex* Smith	20 SEP	3	3	6
Andrenidae	*Andrena violae* Robertson	2 APR	0	1	1
Andrenidae	*Perdita octomaculata* (Say)	19 SEP – 20 SEP	23	6	29
Andrenidae	*Pseudopanurgus compositarum* (Robertson)	19 SEP – 20 SEP	0	2	2
Megachilidae	***Coelioxys dolichos* Fox**	13 JUN	0	1	1
Megachilidae	*Coelioxys octodentata* Say	13 JUN	0	1	1
Megachilidae	*Coelioxys sayi* Robertson	2 JUL	0	1	1
Megachilidae	*Heriades leavitti* Crawford	19 SEP – 20 SEP	0	1	1
Megachilidae	*Heriades variolosus* (Cresson)	2 JUL	0	12	12
Megachilidae	*Hoplitis pilosifrons* (Cresson)	22 MAY – 23 MAY	1	0	1
Megachilidae	*Megachile inermis* Provancher	13 JUN	0	2	2
Megachilidae	*Megachile mendica* Cresson	11 JUN – 2 JUL	0	3	3
Megachilidae	*Megachile sculpturalis* Smith	11 JUN	0	1	1
Megachilidae	*Megachile xylocopoides* Smith	13 JUN – 2 JUL	0	2	2
Megachilidae	*Osmia pumila* Cresson	2 APR – 23 MAY	6	2	8
Apidae	*Apis mellifera* Linnaeus	21 SEP	0	1	1
Apidae	*Bombus bimaculatus* Cresson	4 MAY – 12 JUN	0	7	7
Apidae	*Bombus griseocollis* (DeGeer)	12 JUN – 13 JUN	0	4	4
Apidae	*Bombus pensylvanicus* (DeGeer)	13 JUN – 17 JUL	0	1	1
Apidae	*Epeolus pusillus* Cresson	19 SEP – 20 SEP	0	11	11
Apidae	*Epeolus scutellaris* Say	19 SEP – 20 SEP	1	15	16
Apidae	*Nomada articulata* Smith	22 MAY – 23 MAY	1	1	2
Apidae	*Nomada maculata* Cresson	4 MAY	1	0	1
Apidae	*Ceratina calcarata* Robertson	22 MAY – 20 SEP	6	4	10
Apidae	*Ceratina dupla* Say	2 APR – 20 SEP	10	4	14
Apidae	*Ceratina strenua* Smith	2 APR – 20 SEP	6	4	10
Apidae	*Melissodes druriella* (Kirby)	19 SEP – 20 SEP	5	8	13
Apidae	*Xylocopa virginica* (Linnaeus)	2 APR – 17 JUN	0	4	4

Table 1. Bee species collected at Assateague Island National Seashore, Worcester County, Maryland, 2005-2007. Species in **bold** are newly reported for Maryland. (*Definitive *Sphecodes* species determination is not currently possible.)

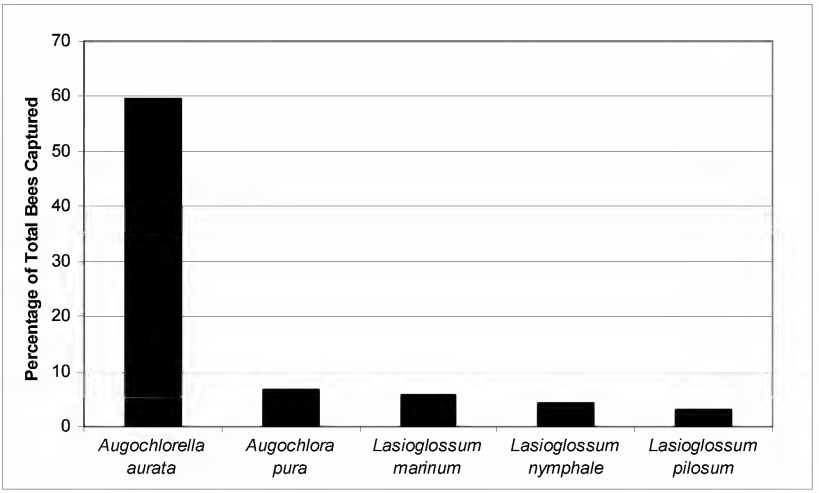

Figure 1. Five most numerous spring bee captures at Assateague Island National Seashore, Worcester County, Maryland, April/May 2005-2007 (24 species, 316 individuals).

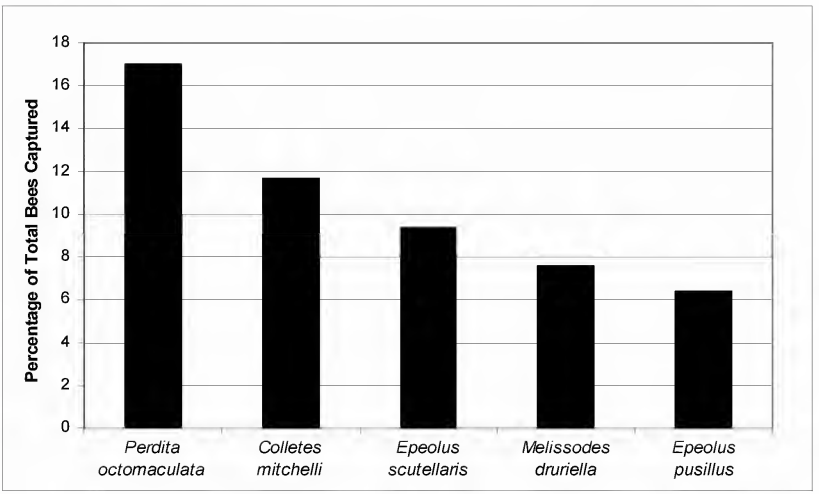

Figure 2. Five most numerous fall bee captures at Assateague Island National Seashore, Worcester County, Maryland, September 2005-2007 (30 species, 171 individuals).

DISCUSSION

The interest in native pollinators has grown over the past few years ever since *Apis mellifera* Linnaeus, Honey Bee, populations started declining. The significance of native bees cannot be overemphasized due to their importance in pollination and thus on the structure of plant communities. This is also the case on ASIS.

The Honey Bee was once a common sight at flowers on ASIS (NPS personnel, personal communication) and there is little doubt that wild colonies previously existed on the island. While the Honey Bee was never a long-term resident on the island, populations did manage to re-establish themselves after major storm events. This is no longer the case due to the introduction of the Honey Bee Tracheal Mite, *Acarapis woodi* (Rennie) and the Varroa Mite, *Varroa destructor* Anderson & Trueman, into North America in the 1980s. Wild Honey Bee colonies are not only gone from the island, but also from most of the adjacent mainland. A single Honey Bee was recorded from the island during the three-year survey. It was a well-worn individual found at the far southern end of ASIS and most likely came from a distant managed bee colony.

There was quite a contrast between the native bees on the island and those on the mainland. The following sand specialists were found: *Agapostemon splendens* (Lepeletier), *Lasioglossum halophitum* (Graenicher), *L. lustrans* (Cockerell), *L. nymphale* (Smith), *Heriades variolosus* (Cresson), *Colletes thoracicus* Smith and *Perdita octomaculata* (Say). Even more restrictive in habitat were the dune/beach specialists that included *Colletes mitchelli* Stephen, *Lasioglossum marinum* (Crawford) and possibly *Andrena braccata* Viereck. In the spring *L. nymphale* and *L. marinum* were among the five most abundant bees found on the island (Figure 1), while in the fall, *P. octomaculata* and *C. mitchelli* were among the top five species (Figure 2). Most telling is that *Colletes mitchelli* (Figure 3), *Lasioglossum lustrans* (Figure 4) and *Lasioglossum nymphale* (Figure 5) were not known from Maryland until this survey, despite a good number of mainland Maryland bee surveys. *Lasioglossum marinum*, one of the two dune/beach specialists mentioned above had previously been collected only along a few Chesapeake Bay beaches (Droege, personal communication). For all of these sand-specialist bees, additional research is warranted to determine their habitat requirements and whether potential human impacts are occurring due to beach recreation.

Lasioglossum lustrans is an interesting bee in that it is a specialist on *Pyrrhopappus carolinianus* (Walter) DC., Carolina desert-chicory, where it appears largely restricted to the plant's range (Droege, personal communication). Higgins et al. (1971) lists *P. carolinianus* as rare on the island. Based on multiple individuals of *L. lustrans* encountered on the island, either the

plant has increased in numbers since 1971 or the bee is utilizing other plant species.

Figure 3. ***Colletes mitchelli*** **Stephen. Assateague Island National Seashore, Worcester County, Maryland, 19 September 2006. (new Maryland species)**

Figure 4. ***Lasioglossum lustrans*** **(Cockerell). Assateague Island National Seashore, Worcester County, Maryland, 19 September 2006. (new Maryland species)**

Figure 5. ***Lasioglossum nymphale*** **(Smith). Assateague Island National Seashore, Worcester County, Maryland, 22-23 May 2007. (new Maryland species)**

Besides the above three new sand/dune/beach specialists, two additional Maryland bee species were added during the survey. These were *Lasioglossum truncatum* (Robertson) (Figure 6) and *Coelioxys dolichos* Fox (Figure 7). The former was known from Virginia and Pennsylvania so it was really not a surprise. The latter is a nest parasite of the leaf cutting bee *Megachile xylocopoides* Smith. *Coelioxys dolichos* had never been collected north of North Carolina prior to this survey.

The genus *Colletes* Latreille was more strongly represented on the island than on the mainland. The common fall island species, *Epeolus scutellaris* Say and *Epeolus pusillus* Cresson, are nest parasites of *Colletes* species.

Assateague Island National Seashore was missing large groups of spring forest/shrub species in the *Osmia* Panzer, *Nomada* Scopoli, and *Andrena* Fabricius genera that are present on the mainland. Eucerines (a tribe of Apidae: Apinae) were in general also lacking, likely due to the absence of a large or a diverse assemblage of fall composites (Asteraceae). Another oddity was the absence of *Megachile brevis* Say, which is a relatively common bee in dry sand on the mainland. Other interesting bees that appear to be missing from ASIS are *Bombus impatiens* Cresson and *Halictus confusus* Smith. *Bombus impatiens* is by far the most common bumblebee on the mainland and *Halictus confusus* is also very common on the mainland.

Figure 6. ***Lasioglossum truncatum*** **(Robertson). Assateague Island National Seashore, Worcester County, Maryland, 17 June 2006. (new Maryland species)**

Figure 7. ***Coelioxys dolichos*** **Fox. Assateague Island National Seashore, Worcester County, Maryland, 13 June 2006. (new Maryland species)**

Additional questions are why *Perdita octomaculata* occurs on the island but there are no additional species of *Perdita* Smith, and why only *Hylaeus modestus* Say and no other species in this genus were found.

Very little is known about the natural history of any of the bee species that occur on ASIS. It is clear that the native bee assemblage on the island is unique in Maryland and possibly in the whole Mid-Atlantic region and deserves additional study.

ACKNOWLEDGEMENTS

I would like to thank Carl Zimmerman, Jack Kumer and the other resource management staff at Assateague Island National Seashore for their support on this project. They graciously provided housing, an over-the-sand vehicle, lab equipment, access to their insect collection and freely shared their collective scientific expertise and knowledge of the island. Their active support greatly enhanced the quality of the project.

Without identification help from Sam Droege, Head of the USGS Native Bee Inventory and Monitoring Laboratory, this project could not have been accomplished. In addition, his willingness to visit Assateague Island and participate in the trapping and netting of the island's bees was greatly appreciated.

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Preliminary Observations on the Use of Artificial Nest Sites by Ants (Hymenoptera: Formicidae)

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INTRODUCTION

During the spring of 2009, a preliminary survey of cavity-nesting ants (Hymenoptera: Formicidae) was conducted in Patapsco Valley State Park, Howard County, Maryland, to determine which species would inhabit artificially created cavity nest sites and how readily these sites would be accepted.

MATERIALS AND METHODS

I often collect ant colonies in acorns and hollow twigs, so I thought of possible substitutes that were readily available. I designed two types of artificial nest sites to use in my study. Wooden artificial nest sites (Figure 1) were constructed from birch dowels 2.2 cm (7/8 inch) in diameter and 0.9 m (36 inches) long. They were cut into 7.6-cm (3-inch) sections, each section further cut in half along the long axis. A cavity was chiseled out of one of the two halves of dowel section and a tunnel was cut out that connected the cavity to one end of dowel to provide ants access to the cavity. A strip of brown kraft paper, cut to fit the area of the cut halves, was sandwiched between the halves and the cut halves held together with two 10.2-cm (4-inch) plastic cable ties.

Additional artificial nest sites (Figure 2) were constructed of 5.1-cm (2-inch) sections of chlorinated polyvinyl chloride (CPVC) pipe 1.3 cm (1/2 inch) in diameter with end caps on each end, one of which contained a 0.3-cm (1/8-inch) drilled hole. A strip of damp corrugated paper was placed inside each of the pipe sections.

Twelve wooden and 11 CPVC sections were constructed. They were placed within the Daniels Area of the Patapsco Valley State Park along a section of a 200-meter (656.2-feet) transect used during an earlier study. Six wooden and 6 CPVC cavity sites were placed on the ground either under stones or exposed on the ground near the bases of trees. The remaining 6 wooden and 5 CPVC nest sites were tied to the bases of small trees or shrubs 30.5 cm (12 inches) above the ground or to the smaller tree branches 1.5-1.8 m (5-6 feet) above the ground. The nest sites were left in place from 18 April 2009 to 16 September 2009; and then collected in individual plastic bags and placed in a freezer for 24 hours. After this, the ants were removed from the cavities and identified to species.

Figure 1. Wooden artificial nest site constructed from a 7.6-cm (3-inch) section of birch dowel.

Figure 2. Plastic artificial nest site constructed from a 5.1-cm (2-inch) section of chlorinated polyvinyl chloride (CPVC) pipe.

Subsequent to my study, I became aware of previous uses of in-field, artificial nest sites by a few other investigators. Philpott and Foster (2005) studied arboreal twig-nesting ants using natural and artificial nests on coffee farms. The natural nests were hollow coffee twigs and the artificial ones were made from bamboo stems. Herbers and Banschbach (1995) studied nest site choice of cavity-nesting ants in north temperate forests by using artificial nests made from birch dowels (a different design than the one I created).

RESULTS AND DISCUSSION

Nine cavity sites (39% of the total nests deployed) became occupied by three species of ants: *Temnothorax curvispinosus* (Mayr) (Figure 3); *Camponotus subbarbatus* Emery (Figure 4); and *Myrmica punctiventris* Roger (Figure 5). A slight majority (56%; n=5) of the occupied sites were inhabited by *T. curvispinosus*, with *C. subbarbatus* present in 33% (n=3) and *M. punctiventris* present in 11% (n=1) of the sites. There was a strong preference to wooden nest sites (89%; n=8) over the CPVC sites (11%; n=1). The sole non-wood cavity site was occupied by *M. punctiventris*. This species is widespread in Maryland, but at this particular locality is not a common species and is more of a ground nesting species than the other two. *Camponotus subbarbatus* is largely arboreal, but *T. curvispinosus* is equally at home in cavities on or under the ground as well as in trees. At the Daniels Area site, however, there was a much greater tendency to occupy arboreal sites: all of the occupied wooden cavities were several feet above the ground. Of the occupied cavity sites, 78% (n=7) contained brood, and of the brood-containing colonies, alates (winged individuals) were present in 29% (n=2) of them. The number of colonies containing alates would have been likely higher if the sites were examined earlier (*T. curvispinosus* alates usually leave the nest by September based on unpublished field records), but this was not the scope of the study. Those nest sites lacking brood contained a few workers, all *T. curvispinosus*, and they were likely scouts in search of and examining new cavities to occupy.

A number of socially parasitic or slave-making ants that occur in the genus *Temnothorax* and a couple of other myrmicine (Myrmicinae) ants (including *M. punctiventris*, *Tetramorium caespitum* (Linnaeus), and *Monomorium minimum* (Buckley)) may be present in Maryland. The use of artificial nest sites in various locations in the state has the potential to increase the probability of encountering and mapping the distribution of these generally rare ants, particularly in areas where natural cavities are in short supply.

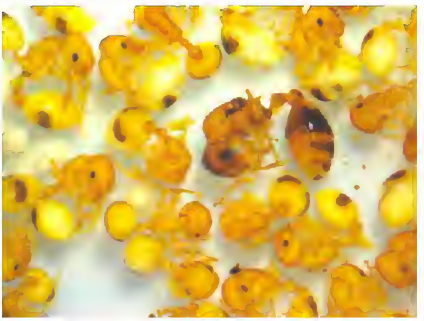

Figure 3. Portion of a *Temnothorax curvispinosus* (Mayr) colony taken from an artificial cavity (wood). The queen is near the center, surrounded by workers. White objects at the left edge of the photo are larvae. Collected 16 September 2009.

Figure 4. Portion of a colony of *Camponotus subbarbatus* Emery taken from an artificial cavity (wood). The large specimen is the queen; below the queen are minor workers. Collected 16 September 2009.

Figure 5. Portion of a *Myrmica punctiventris* Roger colony taken from an artificial cavity (CPVC). The queen is near the lower right; a darker colored, winged male is near the upper left; the white objects are larvae. Collected 16 September 2009.

ACKNOWLEDGEMENTS

This survey was made possible through a Maryland Department of Natural Resources Use Agreement (Minimal Impact) dated 14 April 2008 and through prior approval granted by Robin Melton, Park Manager for Patapsco Valley State Park. I thank an anonymous reviewer of this note.

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The Ants (Hymenoptera: Formicidae) of Assateague Island National Seashore, Worcester County, Maryland: A Preliminary Survey – Corrigendum

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Foard (2009) mistakenly reported *Dolichoderus mariae* Forel from Assateague Island National Seashore, Worcester County, Maryland. The species should have been reported as *Dolichoderus pustulatus* Mayr.

LITERATURE CITED

Foard, T. 2009. The ants (Hymenoptera: Formicidae) of Assateague Island National Seashore, Worcester County, Maryland: a preliminary survey. *The Maryland Entomologist* 5(1):43-48.

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COVER PHOTOGRAPH

Male *Celithemis elisa* (Hagen), Calico Pennant. New Marsh and Sundew Bog, North Tract of Patuxent Research Refuge, U.S. Fish and Wildlife Service. Anne Arundel County, Maryland. 11 June 1998.

Photographed by George M. Jett